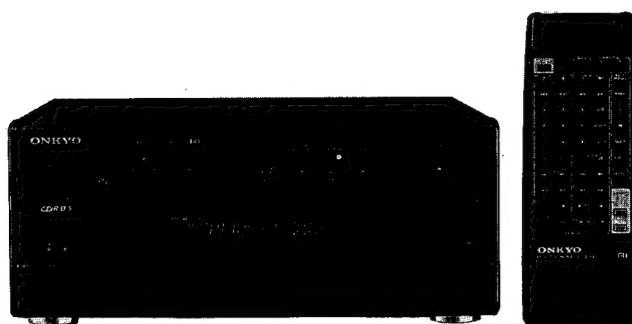


ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL R-811RDS



Black and Silver models

| | |
|---------|-------------------------|
| UP, BUP | 230V AC, 50Hz |
| UW, BUW | 120 or 220V AC, 50/60Hz |

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Amplifier section

| | |
|----------------------------|---|
| Power Output: | 2 × 50 watts at 4 ohms 1 kHz DIN 2 × 35 watts at 8 ohms 1 kHz DIN |
| Continuous Power Output: | 32 watts per channel min. RMS. at 8 ohms both channels driven, from 20 Hz to 20 kHz with no more than 0.2% THD. |
| Dynamic power output | 2 × 70 watts at 4 ohms 2 × 40 watts at 8 ohms |
| Total Harmonic Distortion: | 0.2% at rated power 0.1% at 1 watt output |
| IM Distortion: | 0.1% at rated output |
| Damping Factor: | 40 at 8 ohms |
| Frequency Response: | 20Hz to 30 kHz ± 1 dB |
| RIAA Deviation: | 20Hz to 20 kHz ± 0.8 dB |
| Sensitivity and Impedance: | Phono: 2.5 mV/50 kohms; CD/Tape Play: 150 mV/50 kohms Tape Rec: 150 mV 2.2 kohms |
| Phono Overload: | 100 mV RMS at 1 kHz, 100 mV 0.5% THD |
| Signal-to-Noise Ratio: | Phono: 80 dB (IHF A, 5 mV input); CD/Tape: 100 dB (IHF A) |
| Tone: | Bass: ±10 dB at 100 Hz; Treble: ±10 dB at 10 kHz Super Bass: 10 dB at 55 Hz |
| Muting: | - ∞ dB |

Tuner section

| | |
|-----------------------------|---|
| Tuning Range: | FM; European models 87.50-108.00 MHz (50 kHz steps) Worldwide models 87.50-108.00 MHz (50 kHz steps) 87.9-107.9 MHz (200 kHz steps) AM; European models: 522-1611 kHz (9 kHz steps) Worldwide models: 531-1602 kHz (9 kHz steps) 530-1710 kHz (10 kHz steps) |
| Usable Sensitivity: | FM; Mono: 11.2 dBf, 1.0 μV, 75 Ohms IHF, 0.9 μV 75 Ohms DIN Stereo: 17.2 dBf, 2.0 μV, 75 Ohms IHF, 20 μV 75 Ohms DIN AM; 25 μV |
| 50 dB Quieting Sensitivity: | FM; Mono: 16.1 dBf 1.7 μV 75 ohms, Stereo: 36.1 dBf 17 μV 75 ohms |
| Capture Ratio: | FM; 1.5 dB |
| Image Rejection Ratio: | FM; 80 dB AM; 40 dB |
| IF Rejection Ratio: | FM; 90 dB AM; 40 dB |
| Signal-to-Noise Ratio: | FM; Mono: 73 dB IHF, Stereo: 66 dB IHF AM; 40 dB |
| Selectivity: | FM; 55 dB DIN (±300 kHz, 40 kHz dev.) |
| AM Suppression Ratio: | FM; 50 dB |
| Total Harmonic Distortion: | FM; Mono: 0.1%, Stereo: 0.2% AM; 0.8% |
| Frequency Response: | FM; 30-15,000 Hz (±1.5 dB) |
| Stereo Separation: | FM; 40 dB at 1 kHz, 30 dB at 70-10,000 Hz |
| Output Voltage: | FM; 0.75V AM; 150 mV |

General

| | |
|-------------------------|---|
| Power Supply: | European models (except U.K.): AC230V, 50 Hz Canadian models: AC120 V, 60 Hz U.K. & Australian models: AC240 V, 50 Hz Worldwide models: AC120 V and 220 V switchable, 50/60 Hz |
| Dimensions (W × H × D): | 275 × 118 × 336 mm (10-7/8" × 4-11/16" × 13-7/32") |
| Weight: | 5.5 kg, 12.1 lbs. |

SERVICE PROCEDURES

1. Replacing the fuses

For continued protection against fire hazard, replace only with same type and same rating fuse.

CircuitNo. PartNo. Description

| | | |
|------|--------|---------------------------------|
| F901 | 252150 | 3.15A-SE-EAK, Primary fuse (W) |
| F902 | 252073 | 6A-SE-EAK, Primary fuse |
| F903 | 252075 | 2.5A-SE-EAK, AC outlet fuse (P) |

NOTE: (P) :Only 230V model

(W) :Only Worldwide model

2. Memory preservation

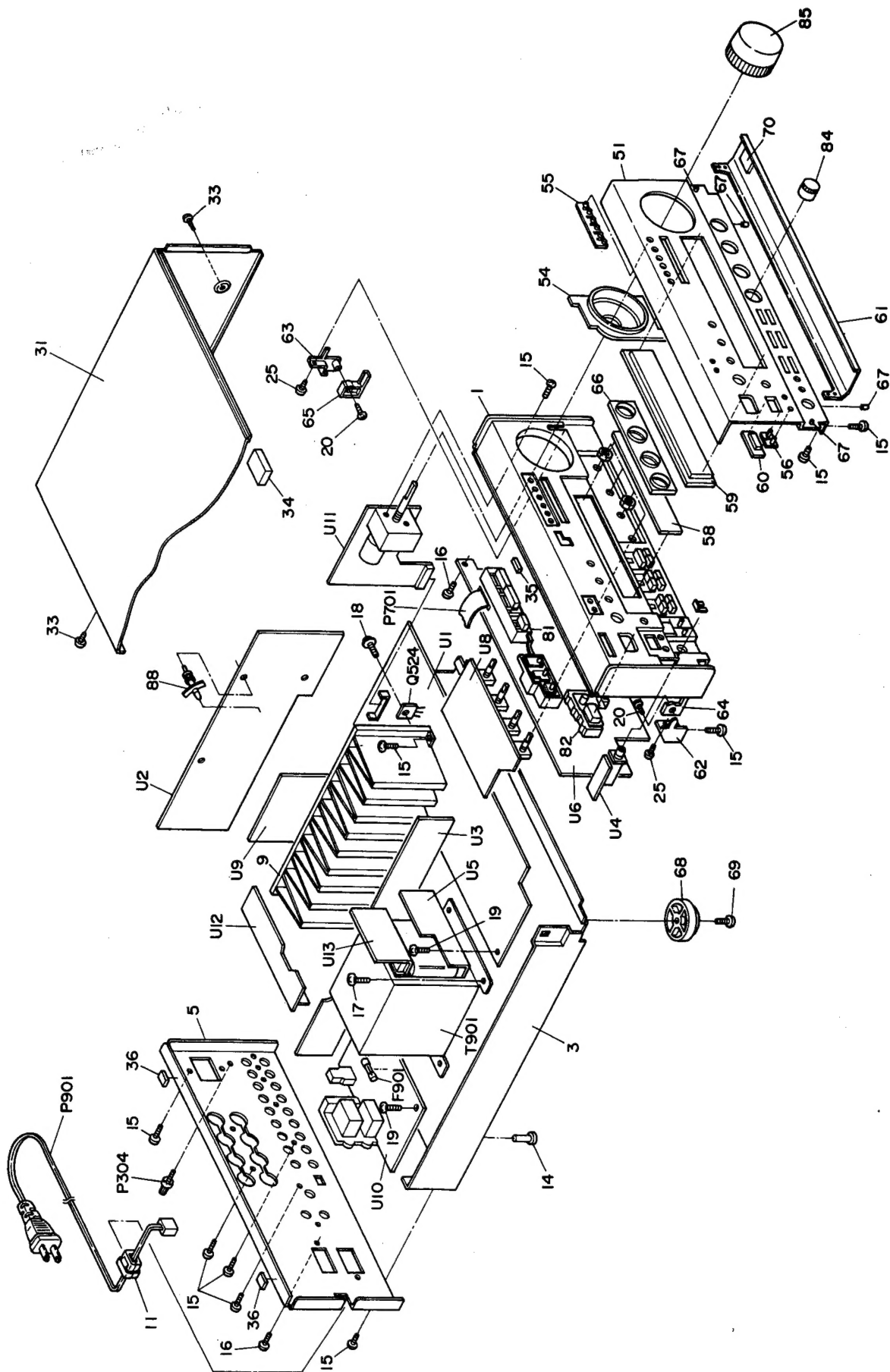
This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

3. Change of voltage

Worldwide models are equipped with a voltage selector to conform with local power supplies. This switch is located on the back panel. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

This switch is set to 220V at the factory. Voltage is changed by sliding the groove in the switch with the screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.

EXPLODED VIEW



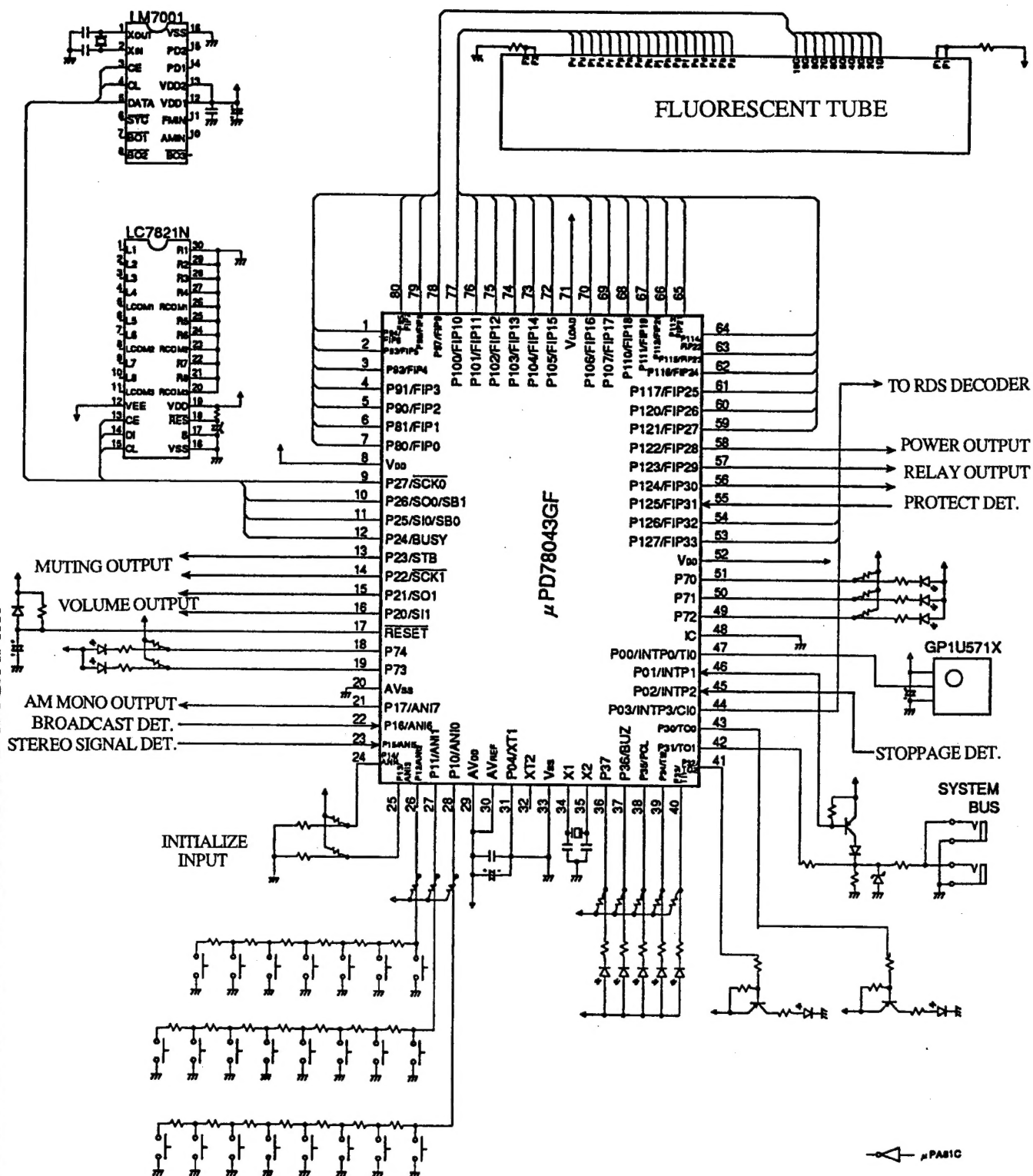
PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION |
|----------|------------|-------------------------------------|----------|-------------|---|
| 1 | 27110799 | Front bracket | 82 | 28324880 | Knob POWER |
| 2 | 27110800 | Front bracket <S> | | 28324881 | Knob POWER <S> |
| 3 | 27130726A | Bracket L | 84 | 28324873A | Knob TONE |
| 5 | 27100281 | Chassis | | 28324876B | Knob TONE <S> |
| 5 | 27121852 | Rear panel <P> | 85 | 28324930 | Knob VOLUME |
| | 27121853 | Rear panel <W> | | 28324931 | Knob VOLUME <S> |
| 9 | 27160333A | Radiator | 91 | 260208 | Wire tie |
| 11 | 27300750 | Bushing cord | | 252150 | 3.15A-TSC,Fuse <W> |
| 14 | 27190813 | KGPS-10RF,Holder | | 252073 | 1.6A-SE-EAK,Fuse |
| 15 | 834430088 | 3TTS+8B(BC),Self-tapping screw | | 252075 | 2.5A-SE-EAK,Fuse <P> |
| 16 | 833430080 | 3TTP+8P(BC),Self-tapping screw | | 25060044 | Terminal GND |
| 17 | 830044089 | 4TTC+8C(BC),Self-tapping screw | | 2047152012 | NCFC7-152012,Flexible flat cable |
| 18 | 801433 | 3SMS8W_SW+14B(BC),Special screw | | 253193HIT | AS-CEE,Power supply cord |
| 19 | 831130088 | 3TTW+8B,Self-tapping screw | | 25065466 | NSS-0002,Power switch |
| 20 | 834426068 | 2.6TTS+6B(BC),Self-tapping screw | | 25062375 | 2SC4466-P, |
| 22 | 801230 | 3TTS+8B(BC),Self-tapping screw | | 2202373, | 2SC4466-O, |
| 24 | 834426088 | 2.6TTB+8B(BC),Self-tapping screw | | 2202374, | 2SC4466-Y, |
| 28 | 27301815 | Cover F | | 2202353 or | 2SC3180N-O or |
| 31 | 28184564A | Top cover | | 2202352 | 2SC3180N-R, Transistors |
| 33 | 28184565A | Top cover <S> | | 2202365, | 2SA1693-P, |
| | 834430088 | 3TTS+8B(BC),Self-tapping screw | | 2202363, | 2SA1693-O, |
| | 834230108 | 3TTS+10B(NI),Self-tapping screw <S> | | 2202364, | 2SA1693-Y, |
| 34 | 28140555-1 | 3 X 36 X 10,Cushion | | 2202343 or | 2SA1263N-O or |
| 35 | 28141284 | 3 X 20 X 8,Cushion | | 2202342 | 2SA1263N-R,Transistors |
| 51 | 1A513121 | Front panel ass'y | | 2301012 | NPT-1207P,Power transformer <P> |
| | 1A514121 | Front panel ass'y <S> | | 2301013 | NPT-1207DG,Power transformer <W> |
| 53 | 28135199 | Badge | | 1A513559-4A | NAAF-4959-4A,Main circuit pc board ass'y <P> |
| 54 | 27267839 | Guide VOL | | 1A513559-4B | NAAF-4959-4B,Main circuit pc board ass'y <W> |
| | 27267840 | Guide VOL <S> | | 1A513560-4A | NARF-4960-4A,Tuner circuit pc board ass'y <P> |
| 55 | 28198797 | Facet 7 | | 1A513560-4B | NARF-4960-4B,Tuner circuit pc board ass'y <W> |
| 56 | 28198795 | Facet | | 1A513561-4 | NAETC-4961-4,Mono output terminal pc board ass'y |
| 58 | 28133311 | Back plate | | 1A513562-4 | NAETC-4962-4,Headphone terminal pc board ass'y |
| | 28133260 | Back plate <S> | | 1A513563-4 | NAETC-4963-4,Pc board for power transformer |
| 59 | 28191667 | Clear plate | | 1A513564-4A | NADIS-4964-4A,Display circuit pc board ass'y <P> |
| 60 | 28191665 | Clear plate | | 1A513564-4B | NADIS-4964-4B,Display circuit pc board ass'y <W> |
| 61 | 28148279A | Door | | 1A513566-4 | NAAF-4966-4,Tone circuit pc board ass'y |
| | 28148280A | Door <S> | | 1A513567-4 | NAAF-4967-4,Main amplifier pc board ass'y |
| 62 | 28180112 | Hinge L | | 1A513568-4A | NAPS-4968-4A,Power supply circuit pc board ass'y <P> |
| 63 | 28180113 | Hinge R | | 1A513568-4B | NAPS-4968-4B,Power supply circuit pc board ass'y |
| 64 | 28180107A | Hinge HL | | 1A513569-4 | NAETC-4969-4,Volume pc board ass'y |
| 65 | 28180108A | Hinge HR | | 1A513570-4 | NAETC-4970-4,Relay circuit pc board ass'y |
| 66 | 27267832 | Guide TONE | | 1A513571-4 | NAETC-4971-4,Pc board for transformer |
| | 27267833A | Guide TONE <S> | | 1A513572-4 | NAETC-4972-4,Voltage selector switch pc board ass'y <W> |
| 67 | 28140860 | Cushion | | | |
| 68 | 27175294Y | Leg | | | |
| 69 | 834430088 | 3TTS+8B(BC),Self-tapping screw | | | |
| 70 | 28324914-1 | Knob DOOR | | | |
| | 28323779-1 | Knob DOOR <S> | | | |
| 81 | 28324946 | Knob SEL | | | |
| | 28324947 | Knob SEL <S> | | | |

NOTE: <S>-Silver model only
 -Black model only
 <P>-230 V model only
 <W>-Worldwide model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK **Δ** ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MICROPROCESSOR CONNECTION DIAGRAM



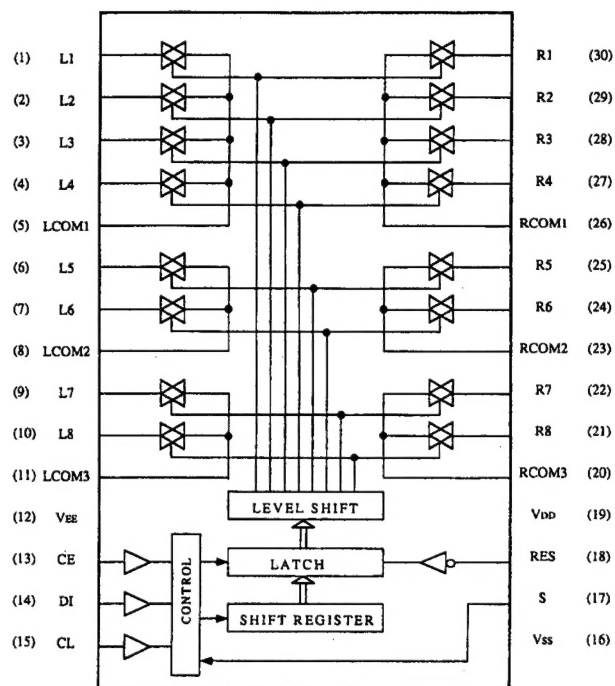
TERMINAL DESCRIPTIONS

| PIN NO. | TERMINAL | D E S C R I P T I O N |
|---------|----------|--|
| 1~7 | 7G~1G | Grid output terminals. On when the high level. |
| 8 | VDD | Positive power source terminal (+5V) |
| 9 | CL | Clock output terminal. Connect to the terminal CL of source selector switch LC7821N and terminal CL of PLL IC. |
| 10 | DATA | Data output terminal. Connect to the terminal DI of source selector switch LC7821N and terminal DI of PLL IC. |
| 11 | CE | Chip enable output terminal. Connect to the terminal CE of source selector switch. |
| 12 | PLL | Connect to the terminal CL of PLL IC. |
| 13 | TUMUT | Muting output terminal for tuner section. |
| 14 | INPUMUT | Muting output terminal for amplifier section. |
| 15 | VOLUP | Volume control output terminals. |
| 16 | VOLDOWN | |
| 17 | RESET | System reset terminal |
| 18 | SPA | SPEAKER A indicator terminal |
| 19 | SPB | SPEAKER B indicator terminal |
| 20 | AVSS | Ground terminal of AD converter |
| 21 | AM MONO | Not used. |
| 22 | SD | Broadcast detection input terminal. |
| 23 | STEREO | Stereo broadcast detection input terminal. |
| 24 | AREA | Initialize input terminal of frequency range. |
| 25 | MODE | Initialize input terminal of operation. |
| 26~28 | K2~K0 | Key input terminals. |
| 29 | AVDD | Analog power source terminal of A/D converter |
| 30 | AVREF | Reference power source terminal of A/D converter |
| 31 | XT1 | Crystal connection terminal for sub system |
| 32 | XT2 | Not used. |
| 33 | VSS | Ground terminal |
| 34 | X1 | Resonator connection terminal for main system |
| 35 | X2 | Connect the 4.19 MHz ceramic resonator. |
| 36 | PHONO | Input selector indicator terminal |
| 37 | TUNER | |

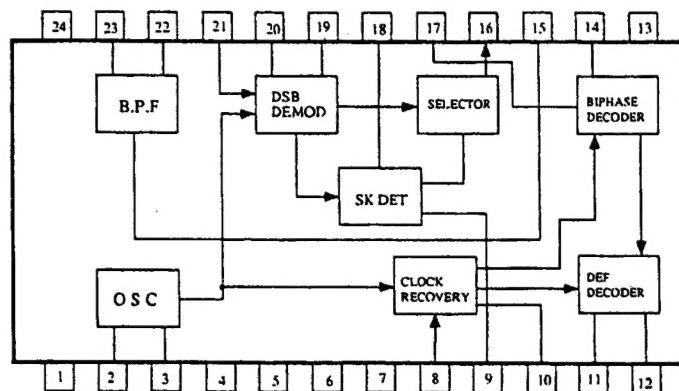
| PIN NO. | TERMINAL | D E S C R I P T I O N |
|---------|----------------|---|
| 38 | CD/FOUT | CD indicator output terminal. Signal output for adjustment when adjustment. |
| 39 | LINE | Input selector indicator terminal |
| 40 | TAPE-2 | |
| 41 | TAPE-1 | Input selector indicator terminal |
| 42 | SYSOUT | System code output terminal |
| 43 | TAPE-1 MONITOR | TAPE-1 MONITOR indicator output terminal |
| 44 | RDSSCK | Clock output terminal for RDS decoder. |
| 45 | POFF | Voltage stoppage detection terminal. |
| 46 | SYSIN | System code input terminal |
| 47 | REMIN | Remote control signal input terminal |
| 48 | IC | Connect to the ground terminal. |
| 49 | PRESET | PRESET indicator terminal |
| 50 | TUNING | TUNING indicator terminal |
| 51 | NC | Not used. |
| 52 | VDD | Power source terminal +5V |
| 53 | RDS DATA | Data input terminal from RDS decoder. |
| 54 | RDSSIG | Signal input terminal from RDS decoder. |
| 55 | PROTECT | Protection circuit operation input |
| 56 | SPARL | SPEAKER A relay control output terminal |
| 57 | SPBRL | SPEAKER B relay control output terminal |
| 58 | POWER | Power source relay control output terminal |
| 59~70 | Pt~Pe | Segment output terminals |
| 71 | VLOAD | Pull down resistor connection terminal for FIP controller/driver |
| 72~75 | Pd~Pa | Segment output terminals |
| 76~80 | 12G~8G | Grid output terminals. |

IC BLOCK DIAGRAMS AND DESCRIPTIONS

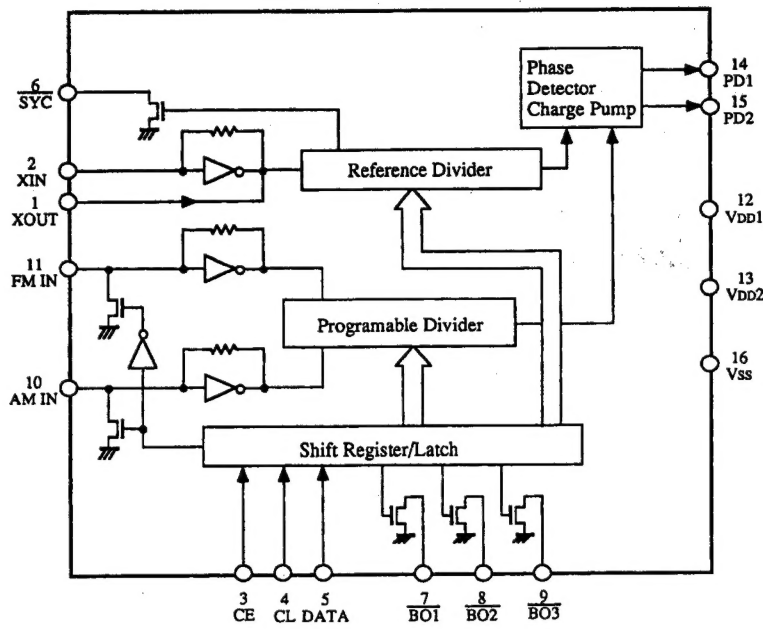
LC7821N (Analogue Switch)



μ PD1346CS (RDS Decoder)

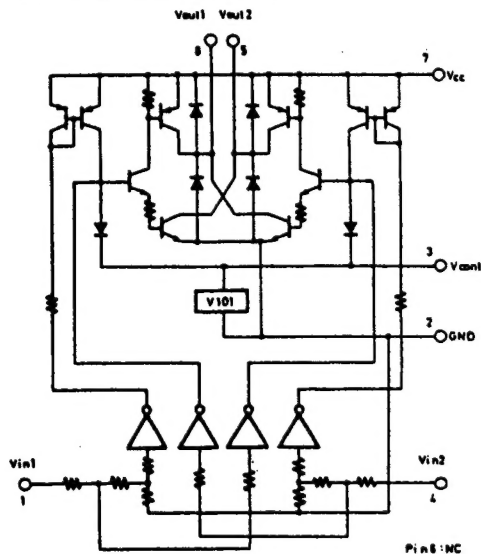


LM7001 (PLL Synthesizer and Controller)



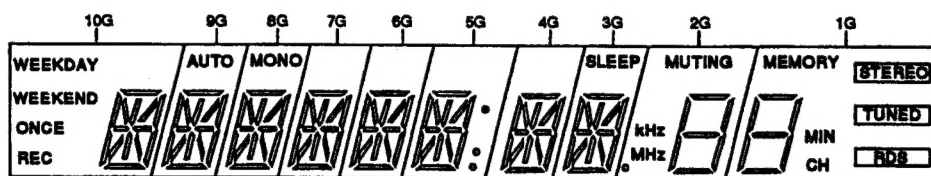
| Pin No. | Terminal | Description |
|---------|-----------|---|
| 1 | XOUT | Connect the 7.2MHz crystal resonator. |
| 2 | XIN | |
| 3 | CE | Chip enable terminal. Connect to the terminal PLL of the microprocessor. |
| 4 | CL | Serial clock input terminal. Connect to the terminal ACL of the microprocessor. |
| 5 | DATA | Serial data input terminal. Connect to the terminal ADA of the microprocessor. |
| 6 | SYN | Not used. |
| 7 | AUTO/MONO | AUTO/MONO selection terminal. Auto at the low level. |
| 8 | FM | FM selection terminal. FM at the low level. |
| 9 | AM | AM selection terminal. AM at the low level. |
| 10 | AMIN | AM local oscillator signal input terminal |
| 11 | FMIN | FM local oscillator signal input terminal |
| 12 | VDD1 | Power supply terminal for back-up. |
| 13 | VDD2 | Power supply terminal |
| 14 | PD1 | Charge pump output terminal |
| 15 | PD2 | Charge pump output terminal |
| 16 | VSS | Ground terminal |

TA7291S (Motor Drive)

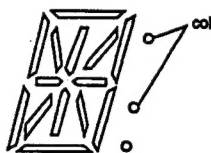


| IN1 | IN2 | OUT1 | OUT2 | MOTOR |
|-----|-----|------|------|---------|
| H | L | H | L | Normal |
| L | H | L | H | Reverse |
| H | H | OFF | OFF | Stop |
| L | L | OFF | OFF | Stop |

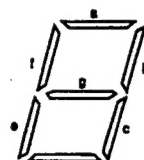
10BT-136GK (FL Tube)



(10G~3G)



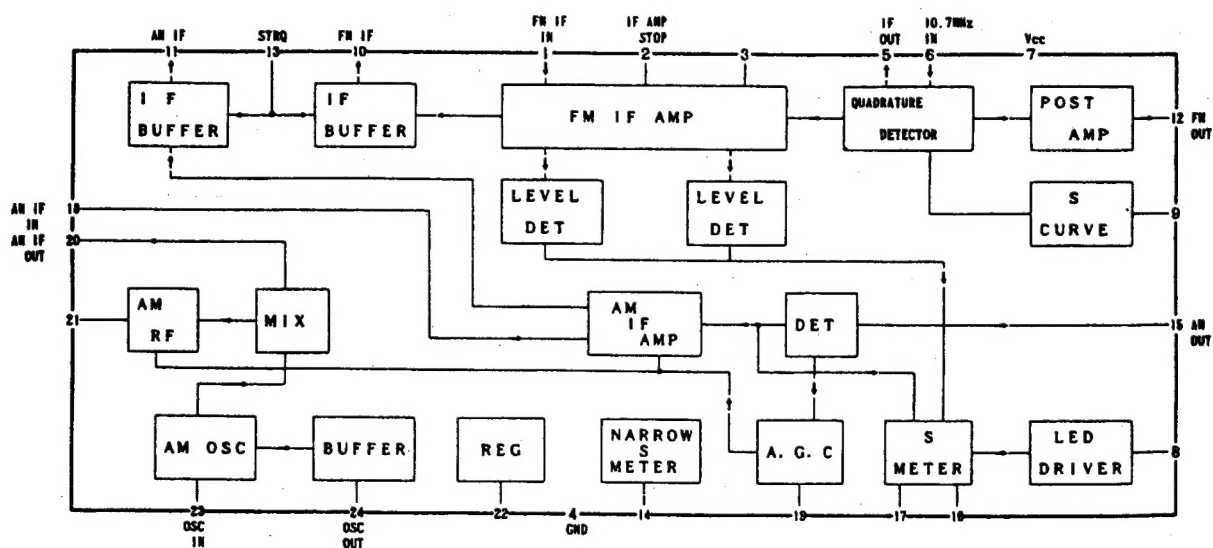
(5G)



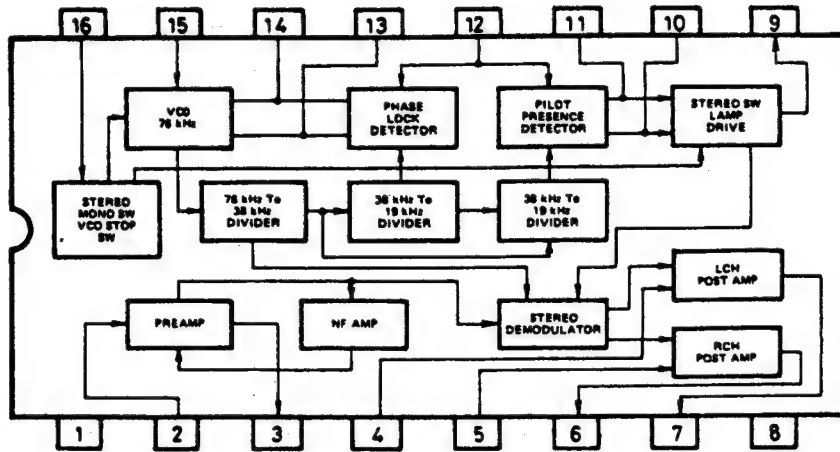
(2G,1G)

| | 10G | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|-----|---------|------|------|----|----|-----|----|-------|--------|--------|
| P1 | a | a | a | a | a | a | a | a | a | a |
| P2 | b | b | b | b | b | b | b | b | b | b |
| P3 | c | c | c | c | c | c | c | c | c | c |
| P4 | d | d | d | d | d | d | d | d | d | d |
| P5 | e | e | e | e | e | e | e | e | e | e |
| P6 | f | f | f | f | f | f | f | f | f | f |
| P7 | g | g | g | g | g | g | g | g | g | g |
| P8 | h | h | h | h | h | h | h | h | - | - |
| P9 | j | j | j | j | j | j | j | j | MUTING | MEMORY |
| P10 | k | k | k | k | k | k | k | k | - | STEREO |
| P11 | m | m | m | m | m | m | m | m | - | TUNED |
| P12 | n | n | n | n | n | n | n | n | - | RDS |
| P13 | p | p | p | p | p | p | p | p | - | - |
| P14 | r | r | r | r | r | r | r | r | - | - |
| P15 | WEEKDAY | AUTO | MONO | - | - | col | - | SLEEP | kHz | MIN |
| P16 | WEEKEND | - | - | - | - | . | - | - | MHz | CH |
| P17 | ONCE | - | - | - | - | - | - | - | . | - |
| P18 | REC | - | - | - | - | - | - | - | - | - |

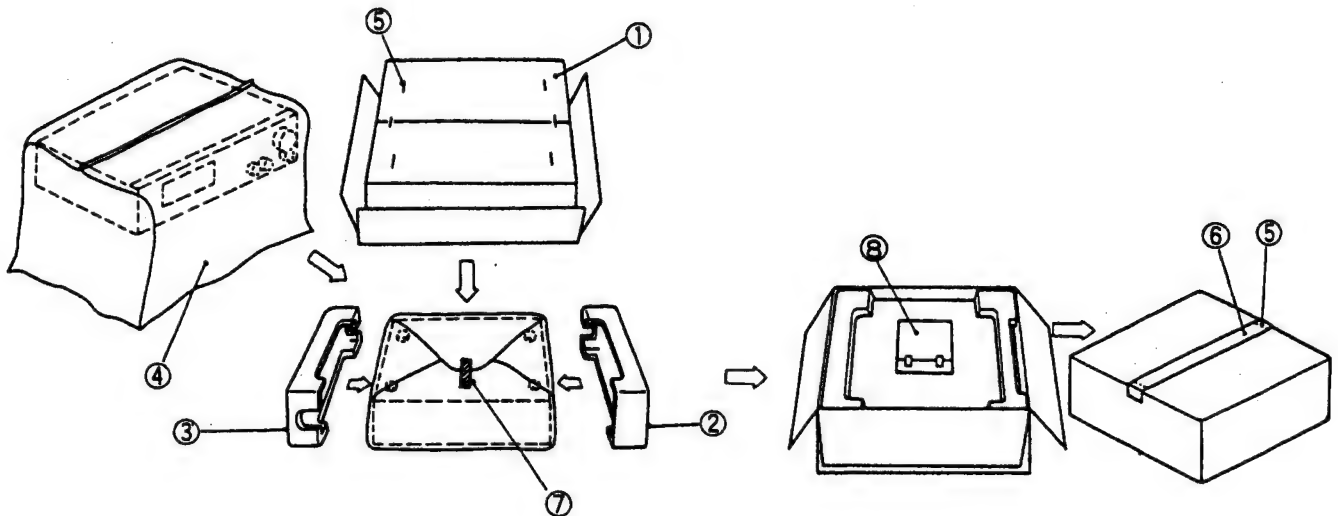
LA1266 (FM IF/AM Radio System)



AN7470 (Stereo Decoder)



PACKING VIEW



| REF. NO. | PART NO. | DESCRIPTION |
|----------|-------------|----------------|
| 1 | 29052754 | Carton box |
| | 29052755 | Carton box <S> |
| 2 | 29091642B | Pad L |
| 3 | 29091643B | Pad R |
| 4 | 29100037-1Y | Styren bag |
| 5 | 282301 | Eight staples |
| 6 | 29110071 | PP tape |
| 7 | 261504 | Paper tape |

NOTE: <S>:Silver model only
 :Black model only
 <P>:230 V model only
 <W>:Worldwide model only
 <V>:Germany model only
 <E>:230 V model only except Germany model

| REF. NO. | PART NO. | DESCRIPTION |
|----------|-------------|----------------------------------|
| | | Accessory bag ass'y |
| | 25055040 | CV-K-2,Conversion plug |
| | 292112Y | FM antenna |
| | 29341934 | Instruction manual <E/W> |
| | 29341937 | Instruction manual <E> |
| | 29341935 | Instruction manual <V> |
| | 29341936 | Instruction manual <W> |
| | 29355133AY | Instruction sheet <V> |
| | 232140 | NMA-3057,AM loop antenna |
| | 24140259 | RC-259S,Remote control unit |
| | 29100097-1Y | Styren bag |
| | 29100094B | Styren bag for warranty card <V> |
| | 3010054 | UM-3,Two batteries |
| | 29365020J | Warranty card <V> |
| | 25065462 | YA21-0237,FM antenna adaptor |

ADJUSTMENT PROCEDURES

Preparation

• Input

FM mono: 1kHz, 75kHz devi., 60dB/ μ V

FM stereo: 1kHz, L+R 67.5kHz devi.: Pilot signal

19kHz 7.5kHz devi.

AM: 400Hz, 30% mod.,

• Output

Connect the non-inductive type resistor of 8 ohms to the speaker terminal A of left and right channels unless otherwise noted.

• Standard knob position

| | |
|--------------------------|---------|
| Input selector..... | CD |
| VOLUME..... | Maximum |
| BASS/TREBLE/S. BASS..... | CENTER |
| BALANCE..... | CENTER |
| SPEAKER..... | A |

Idling Current Adjustment

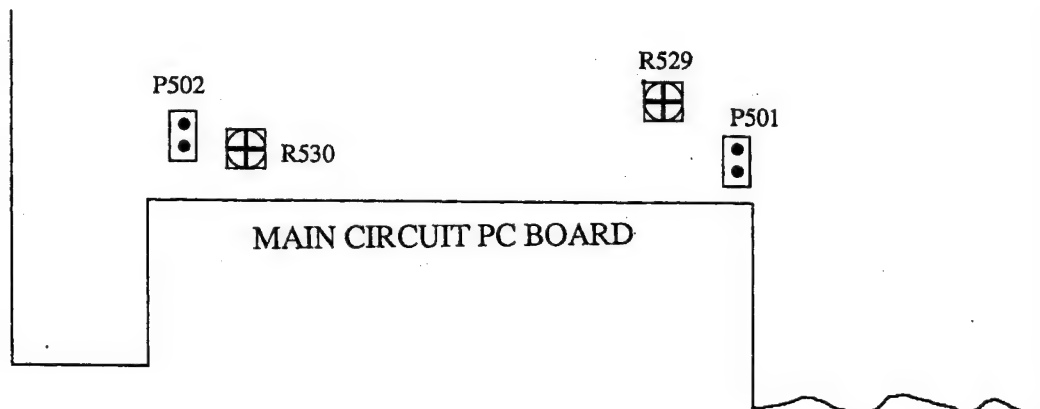
Connect the DC voltmeter to the terminals P501, and P502 (VCT and IID) on the main circuit pc board.

Adjust the trim resistors R529 and R530 so

that the indicator of voltmeter becomes $15 \pm 0.5\text{mV}$.

NOTE: Adjust after switching on for 5 minutes.

Set Volume knob to the minimum position.



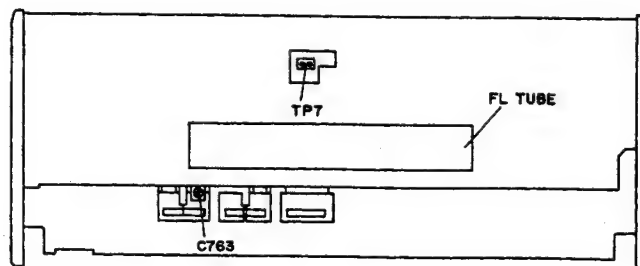
Clock adjustment

Connect the frequency counter to test point TP-7.

Press and hold down the MEMORY button, then press the KEY MODE button.

Adjust the trim capacitor C763 so that the indication of frequency counter becomes $524.288\text{kHz} \pm 1\text{Hz}$.

After adjustment, turn the POWER switch to OFF.

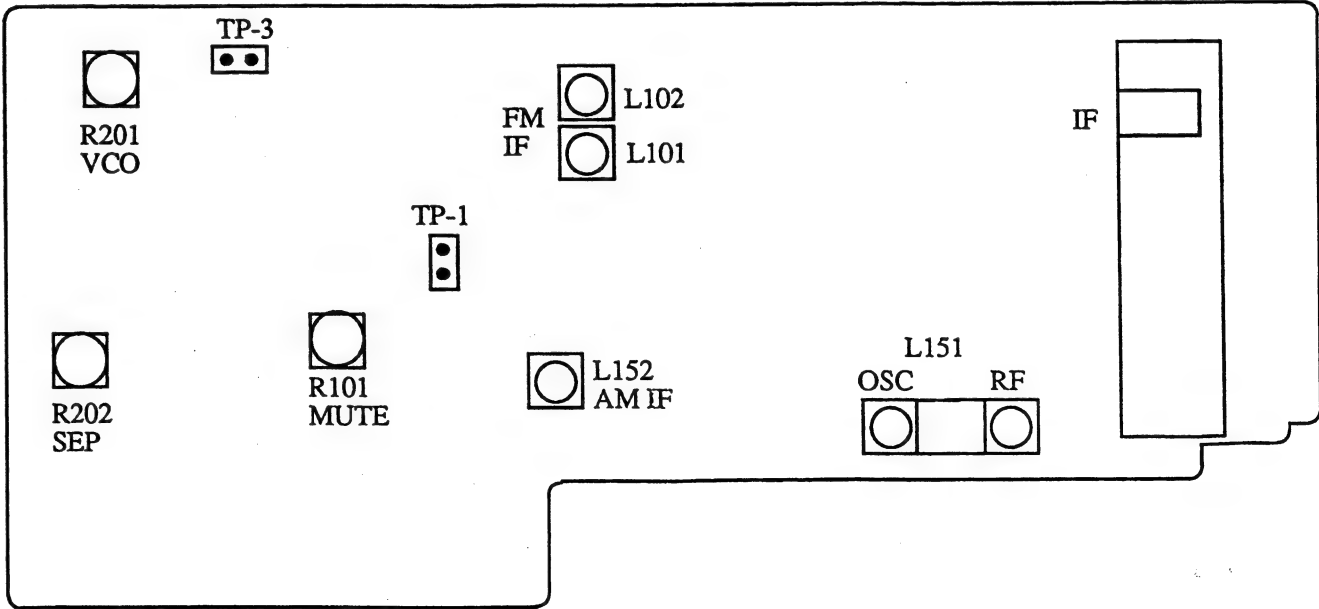
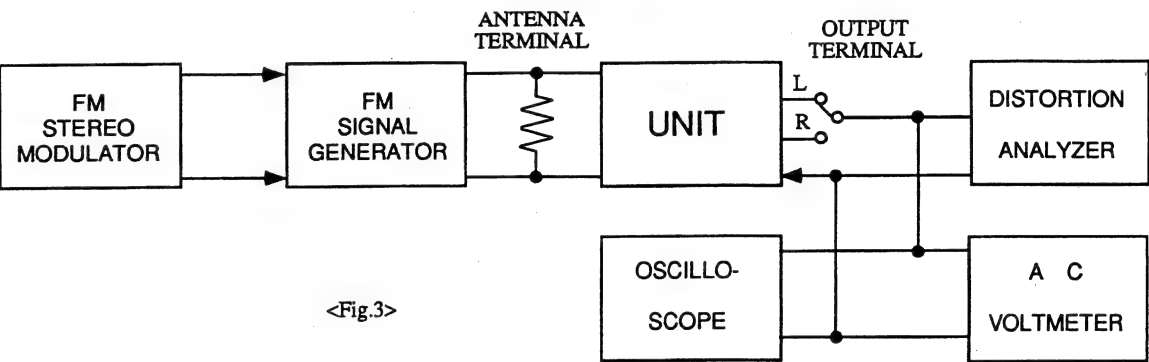
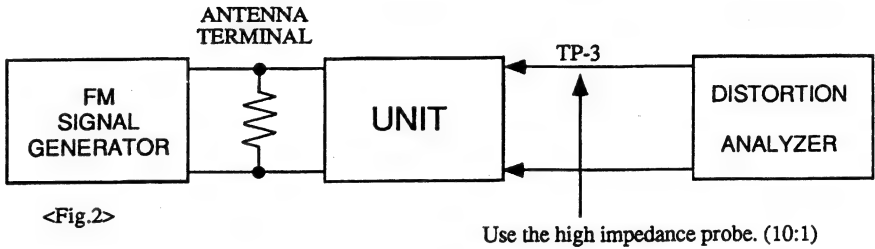
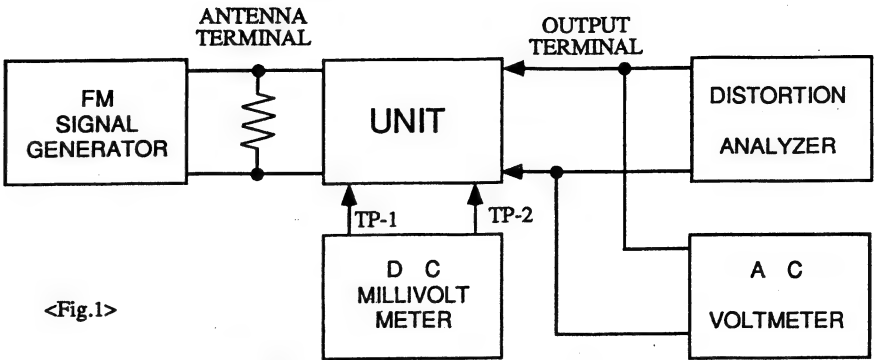
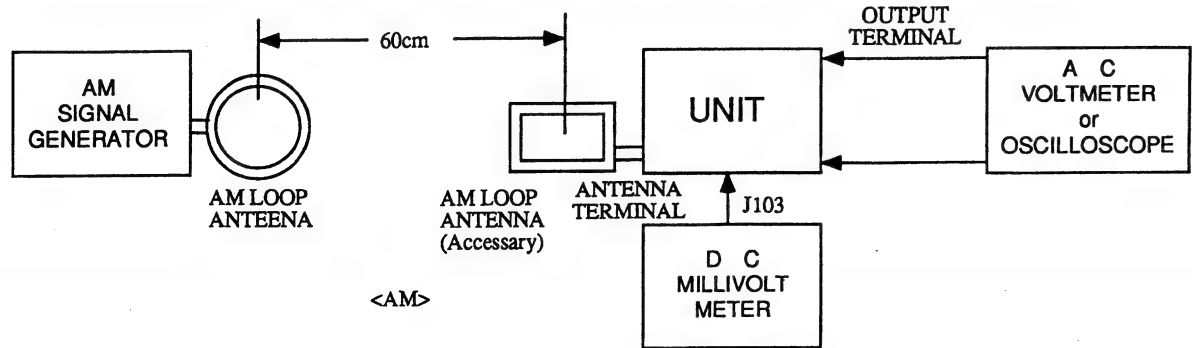


FM ADJUSTMENT

| Item | Step | Connection of instrument | FM SG output | Stereo modulator output | Tuning frequency | Output indicator | Adjustment point | Adjust for | Remarks |
|-------------------|------|--------------------------|--|----------------------------|------------------|------------------------|----------------------|---------------|--|
| FM IF/RF | 1 | Fig.1 | 99.0MHz 1kHz 75kHz devi. 65dBf(60dB) | — | 99.0MHz | DC voltmeter | L101 | 0±20mV | FM MUTE/MODE switch:OFF/MONO Repeat the steps 1 and 3 until no further adjustment is necessary. |
| | 2 | | | | | AC voltmeter | IFT on the front end | Maximum | |
| | 3 | | | | | Distortion analyzer | L102 | Minimum | |
| VCO | | Fig.2 | 99.0MHz 1kHz 75kHz devi. 65dBf(60dB) | — | 99.0MHz | Frequency counter | R201 | 19kHz ± 10Hz | FM MUTE/MODE switch:ON/STEREO |
| Stereo Distortion | | Fig.3 | 99.0MHz Ext. mod.65dBf(60dB) | Channel L or R 1kHz | 99.0MHz | Distortion analyzer | IFT on the front end | Minimum | Don't turn more than ±180° |
| Stereo Separation | 1 | Fig.3 | 99.0MHz Ext. mod. 65dBf(60dB) | Channel L 1kHz | 99.0MHz | Channel R AC voltmeter | R202 | Minimum | Maximum and same separation |
| | 2 | | | Channel R 1kHz | | Channel L AC voltmeter | | Minimum | |
| Muting Level | | Fig.3 | 99.0MHz 19.2dBf(14dB) | — | 99.0MHz | Oscilloscope | R101 | Signal output | |
| RDS | | Fig.4 | 98.0MHz Ext. mod.60dB | RDS data or 57kHz 3% devi. | 98.0MHz | Oscilloscope | R721 | Maximum | |

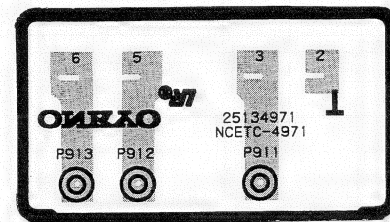
AM ADJUSTMENT

| Step | AM SG output | Tuned Frequency | Output indicator | Adjustment point | Adjust for |
|------|---------------------------------------|-----------------|--------------------|---------------------------|------------|
| 1 | | 522 kHz | DC millivolt meter | OSC coil on RF block L151 | 1.5±0.1V |
| 2 | 603 kHz 400 Hz 30% mod. 60 dB/m | 603 kHz | AC voltmeter | RF coil on RF block L151 | Maximum |
| 3 | 999 kHz 400 Hz 30% mod. 60 dB/m | 999 kHz | AC voltmeter | L152 | Maximum |

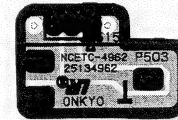


Initialize of unit
Press and hold down the MEMORY button, then press the POWER button.
Unplug the power supply cord from AC outlet.

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



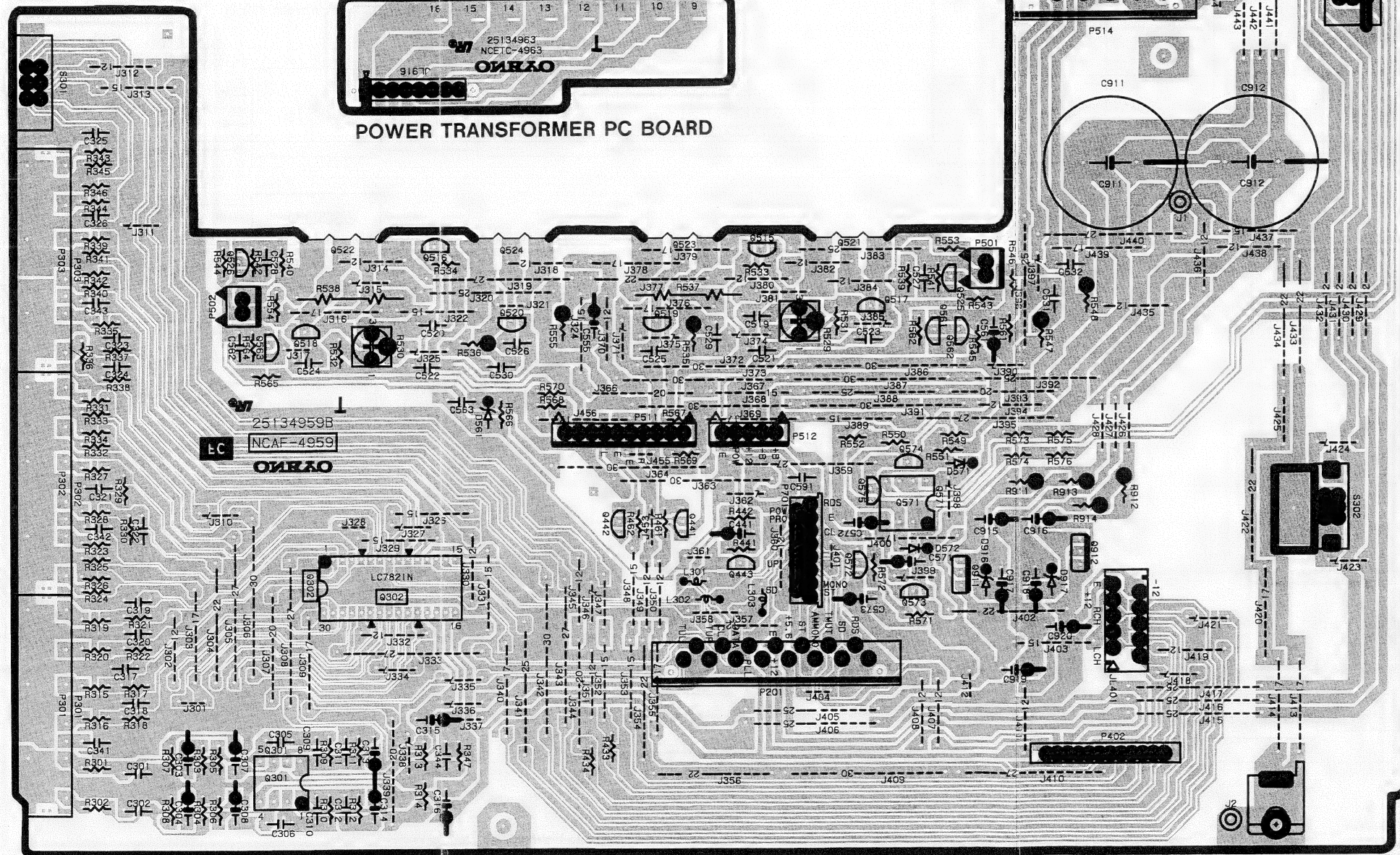
TRANSFORMER PC BOARD



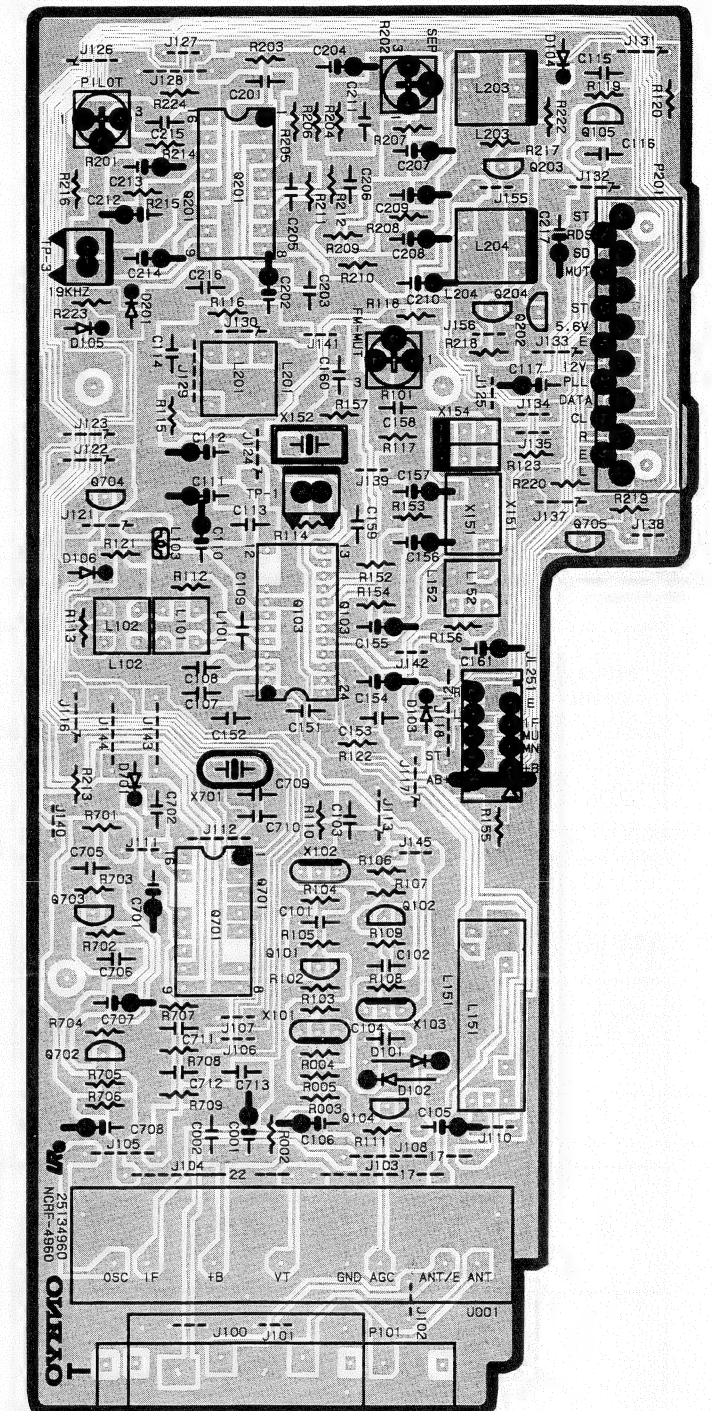
HEADPHONE TERMINAL PC BOARD



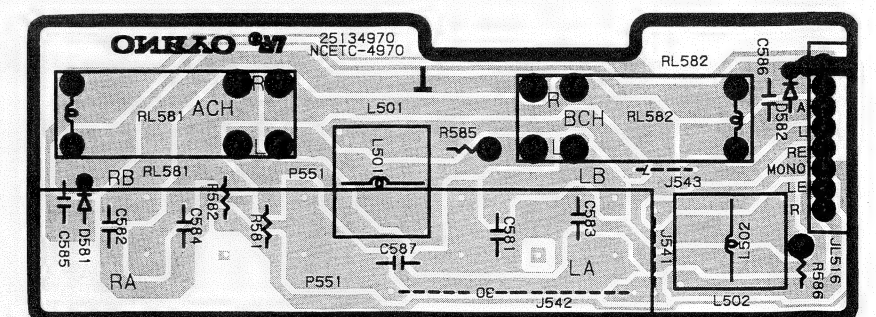
POWER TRANSFORMER PC BOARD



MAIN CIRCUIT PC BOARD

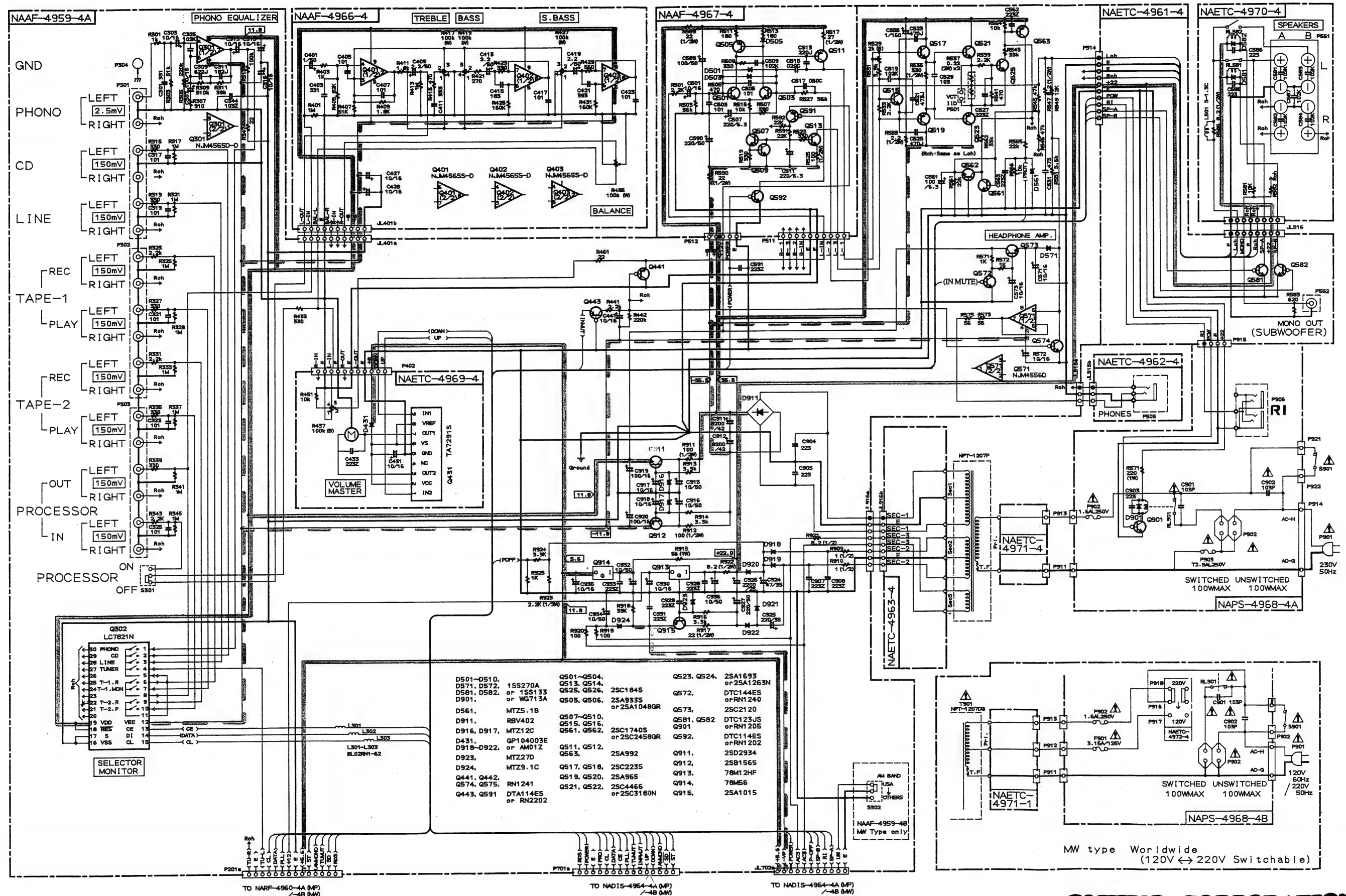


TUNER CIRCUIT PC BOARD



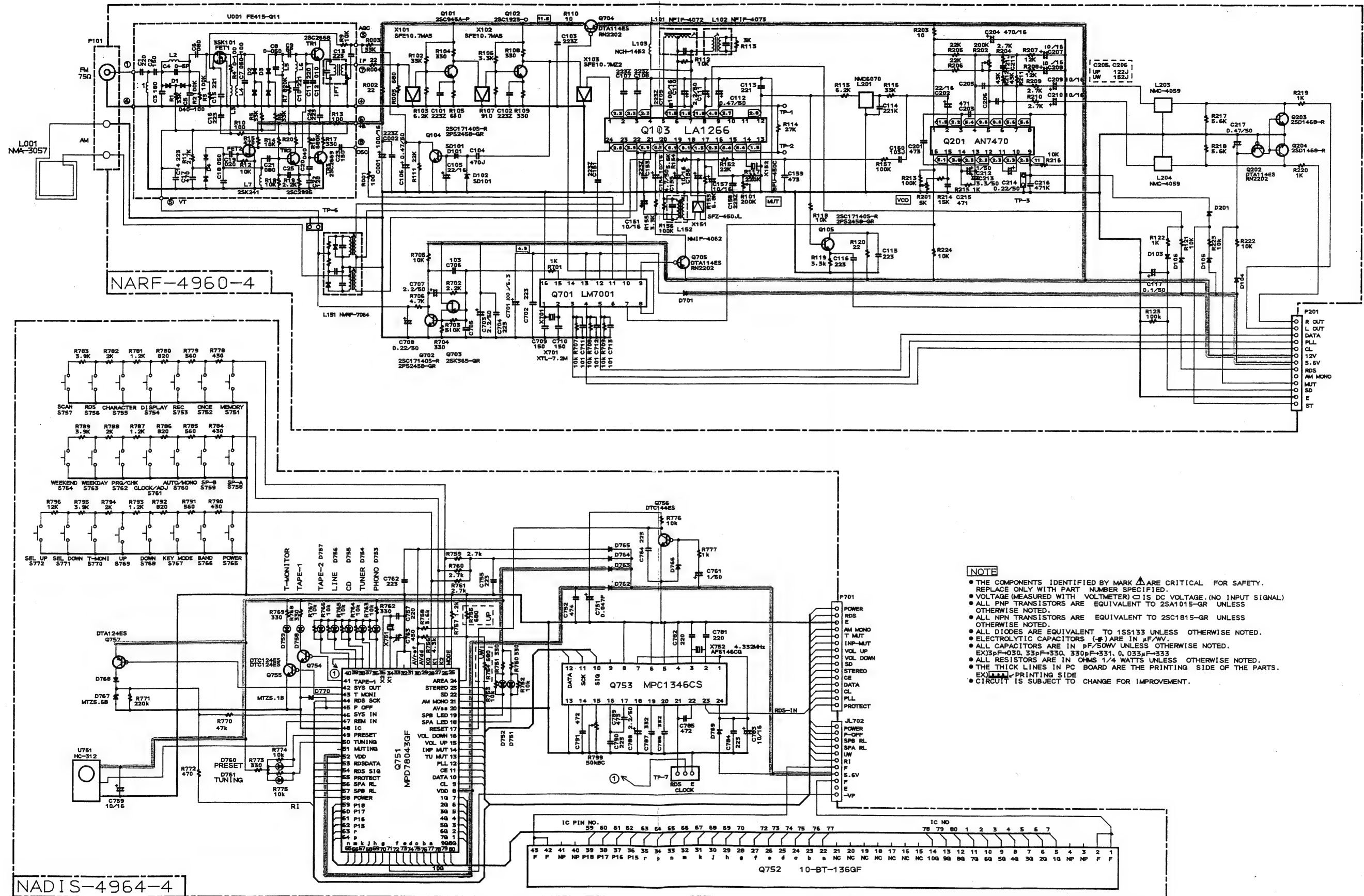
RELAY CIRCUIT PC BOARD

SCHEMATIC DIAGRAM

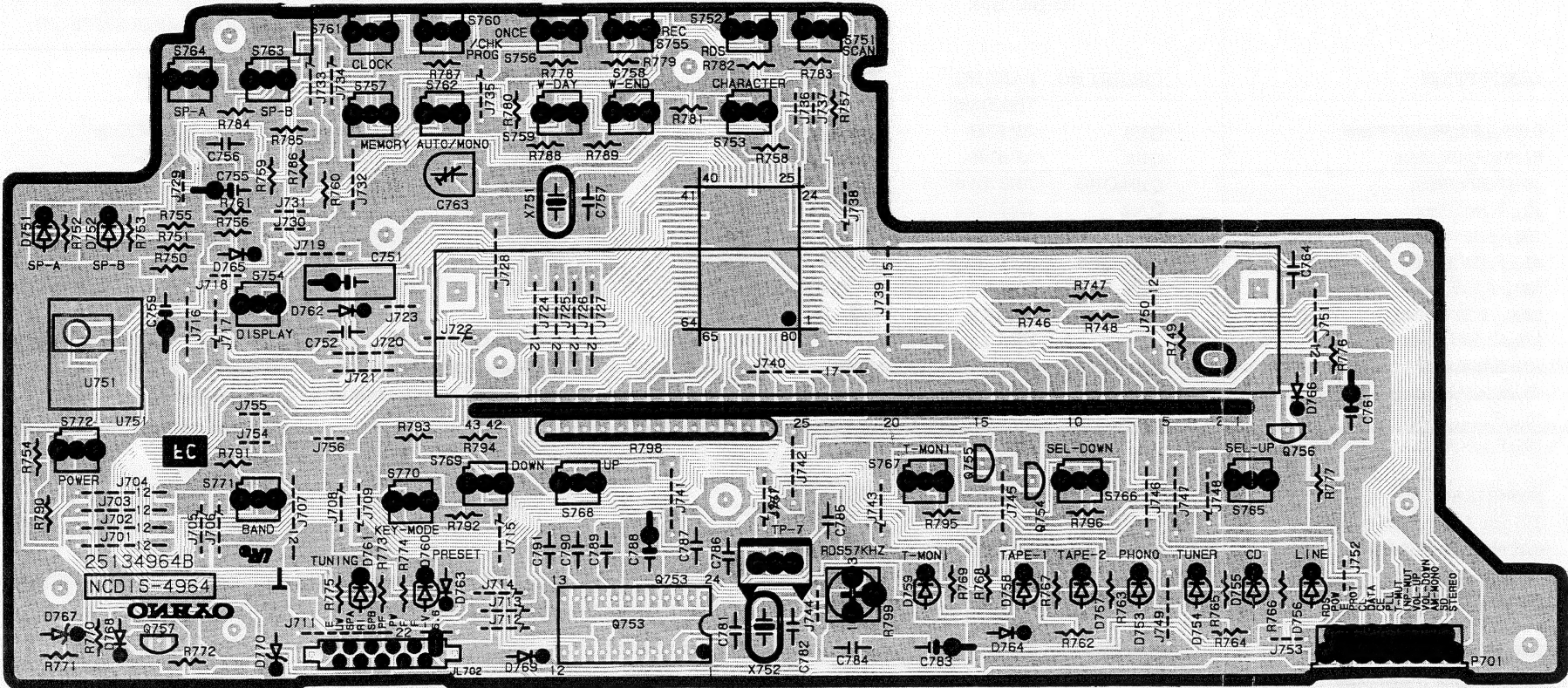


ONKYO CORPORATION

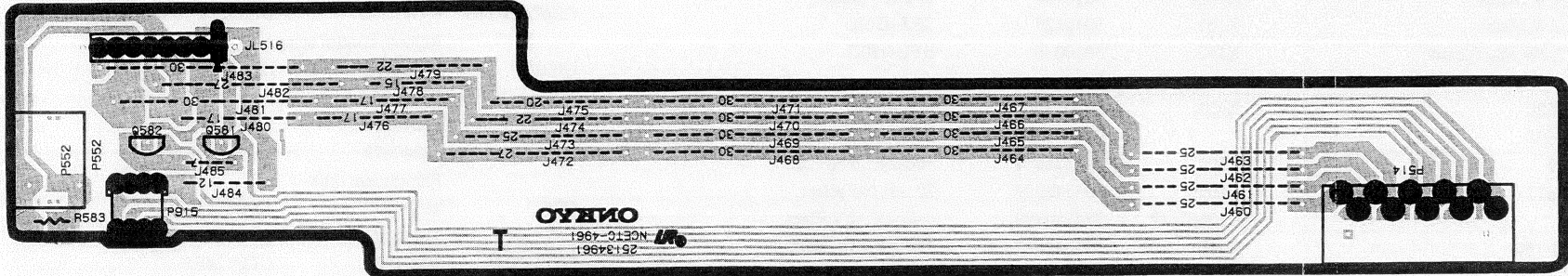
SCHEMATIC DIAGRAM



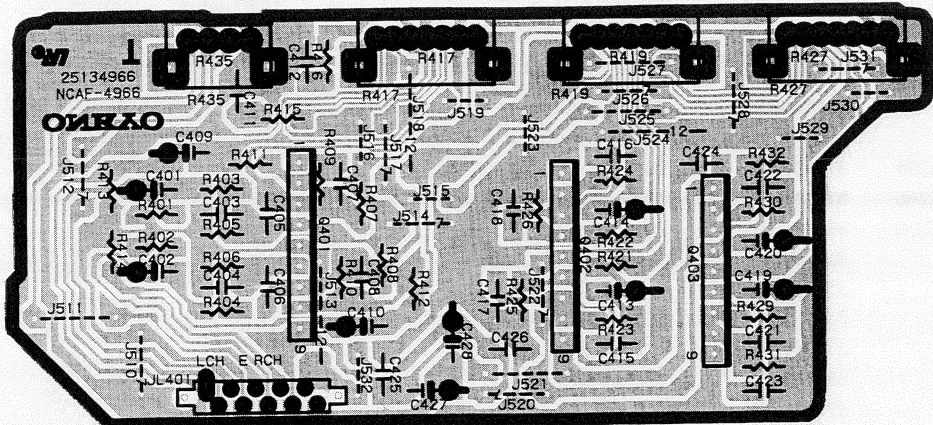
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



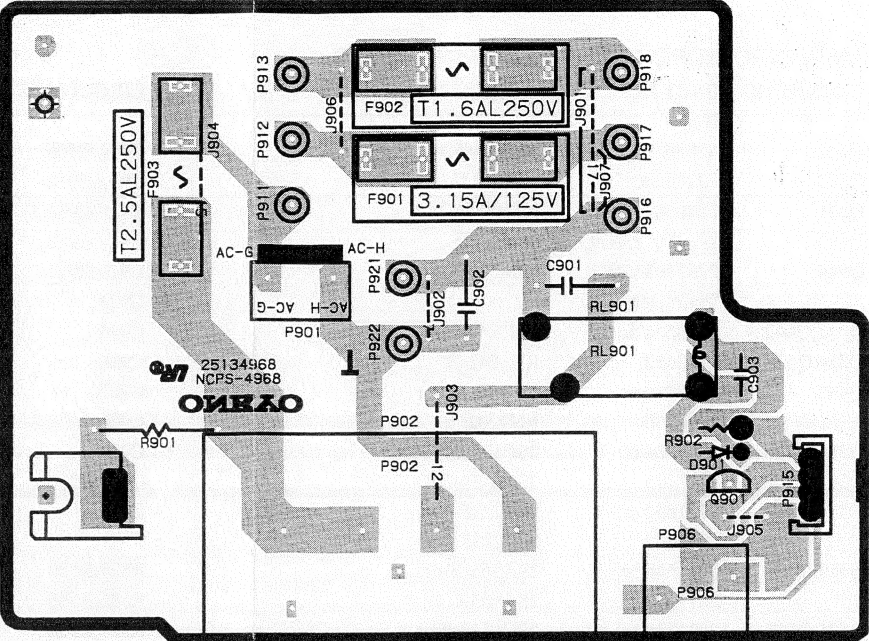
DISPLAY CIRCUIT PC BOARD



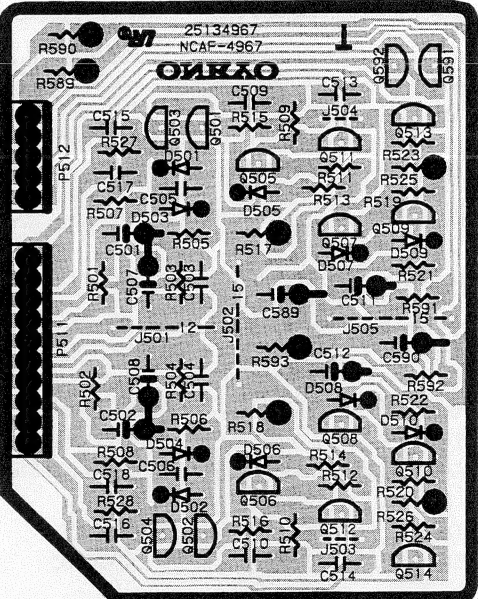
MONO OUTPUT TERMINAL PC BOARD



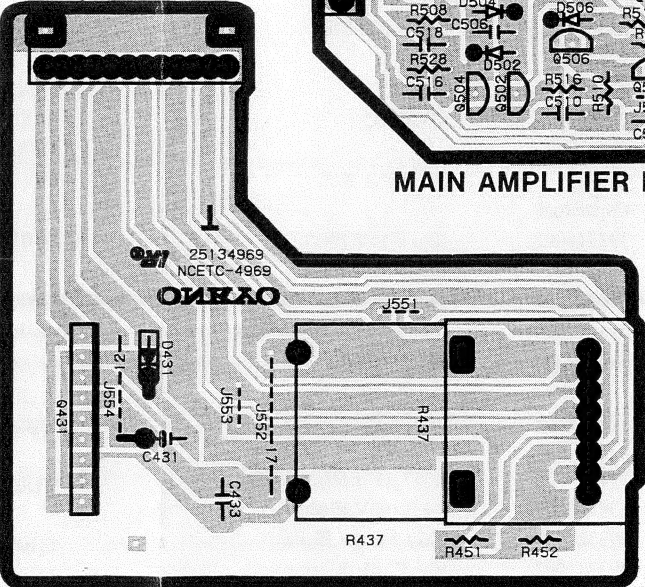
TONE CIRCUIT PC BOARD



POWER SUPPLY CIRCUIT PC BOARD



MAIN AMPLIFIER PC BOARD



PRINTED CIRCUIT BOARD PARTS LIST

CAUTION: Replacement for transistor of mark *, if necessary
must be made from the same beta group (HFE) as the
original type.

NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE
CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK.
REPLACE ONLY WITH PART NUMBER SPECIFIED.

MAIN CIRCUIT PC BOARD (NAAF-4959-4A/4B)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|--------------|------------------------------------|
| | ICs | |
| Q301 | 22240191 | NJM4565D-D |
| Q302 | 22240280 | LC7821N |
| Q571 | 222654 | NJM4556D |
| Q913 | 222780125NEC | 78M12HF |
| Q914 | 222780565JRC | 78M56 |
| | Transistors | |
| Q441,Q442 | 2213631 or | RN1241-A or |
| Q574,Q575 | 2213632 | RN1241-B |
| Q443 | 2213510 or | DTA114ES or |
| | 2214350 | RN2202 |
| Q515,Q516 | 2213284 or | 2SC1740S-R or |
| Q561,Q562 | 2212115 | 2SC2458-GR |
| Q517,Q518 | 2211654 or | 2SC2235-Y or |
| | 2211653 | 2SC2235-O |
| Q519,Q520 | 2211644 or | 2SA965-Y or |
| | 2211643 | 2SA965-O |
| Q525,Q526 | 2211733 or | 2SC1845-E or |
| | 2211732 | 2SC1845-F |
| Q563 | 2211792 or | 2SA992-F or |
| | 2211793 | 2SA992-E |
| Q572 | 221282 or | DTC144ES or |
| | 2213560 | RN1204 |
| Q573 | 2211164 | 2SC2120-Y |
| Q911 | 2202706 or | 2SD2394-F or |
| | 2202705 | 2SD2394-E |
| Q912 | 2202716 or | 2SB1565-F or |
| | 2202715 | 2SB1565-E |
| Q915 | 2211455 | 2SA1015-GR |
| | Diodes | |
| D561 | 224450512 | MTZ5.1B |
| D571,D572 | 223163, | 1SS133, |
| | 223205 or | 1SS270A or |
| | 223222 | WG713A |
| D911 | 22380022F | RBV402 |
| D916,D917 | 224451203 | MTZ12C |
| D918-D922 | 22380035 or | GP104003E or |
| | 22380046 | AM01Z |
| D923 | 224452704 | MTZ27D |
| D924 | 224450913 | MTZ9.1C |
| | Cores | |
| L301-L303 | 230905 | BL02RN1-R62 |
| | Capacitors | |
| C303,C304 | 393341007 | 10 μ F,16V,Elect. |
| C307,C308 | 393341017 | 100 μ F,16V,Elect. |
| C309,C310 | 374726224 | 6200pF \pm 5%,50V,Plastic |
| C311,C312 | 374721824 | 1800pF \pm 5%,50V,Plastic |
| C313-C316 | 393341007 | 10 μ F,16V,Elect. |
| C441 | 393341007 | 10 μ F,16V,Elect. |
| C521,C522 | 374724734 | 0.047 μ F \pm 5%,50V,Plastic |
| C529,C530 | 373731034 | 0.01 μ F \pm 5%,100V,Plastic |
| C531,C532 | 374724734 | 0.047 μ F \pm 5%,50V,Plastic |
| C555 | 354700109 | 1 μ F,160V,Elect. |
| C561 | 393321017 | 100 μ F,6.3V,Elect. |
| C571-C573 | 393341007 | 10 μ F,16V,Elect. |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|--|------------------------------------|
| | Capacitors | |
| C904,C905 | 374722234 | 0.022 μ F \pm 5%,50V,Plastic |
| C911,C912 | 3500184 | 8200 μ F,42V,Elect. |
| C915,C916 | 393381007 | 10 μ F,50V,Elect. |
| C917,C918 | 393341007 | 10 μ F,16V,Elect. |
| C919,C920 | 393341017 | 100 μ F,16V,Elect. |
| C924 | 393364707 | 47 μ F,35V,Elect. |
| C925 | 354762219 | 220 μ F,35V,Elect. |
| C926 | 354752229 | 2200 μ F,25V,Elect. |
| C927 | 354782219 | 220 μ F,50V,Elect. |
| C930 | 393341007 | 10 μ F,16V,Elect. |
| C932 | 393381007 | 10 μ F,50V,Elect. |
| C934,C936 | 393381007 | 10 μ F,50V,Elect. |
| C935 | 393341007 | 10 μ F,16V,Elect. |
| | Resistors | |
| R529,R530 | 5210259 | N06HR2KBC,Trim |
| R535,R536 | 443523314 | 330 ohm,1/2W, Metal oxide |
| R537,R538 | 4500027 | 0.22 ohm,2W, Metal plate |
| R547,R548 | 453530824 | 8.2 ohm,1/2W,Metal |
| R555 | 453530224 | 2.2 ohm,1/2W,Metal |
| R909,R910 | 453530104 | 1 ohm,1/2W,Metal |
| R911,R912 | 443521014 | 100 ohm,1/2W,Metal oxide |
| R913,R914 | 443523324 | 3.3 kohm,1/2W,Metal oxide |
| R915 | 443625604 | 56 ohm,1W,Metal oxide |
| R917 | 453530824 | 8.2 ohm,1/2W,Metal |
| R921,R922 | 453530824 | 8.2 ohm,1/2W,Metal |
| R923 | 443522224 | 2.2 kohm,1/2W,Metal oxide |
| | Plugs | |
| P201a | 25055664 | NPLG-15P620 |
| P402a | 25055651 | NPLG-12P607 |
| P501,P502 | 25055038 | NPLG-2P29 |
| P514a | 25055661 | NPLG-10P617 |
| | Terminals | |
| P301-P303 | 25045300 | NPJ-6PDBL159 |
| | Switches | |
| S301 | 25065286 | NSS-22112 |
| S302 | 25065414 | NSS-2215S <W> |
| | Wire traps | |
| JL401a | 25055631 | NPLG-10P593 |
| JL515a | 25050267 | NSCT-3P95 |
| JL702a | 25055632 | NPLG-11P594 |
| JL916a | 25050272 | NSCT-8P100 |
| | Socket | |
| P701a | 25050955 | NSCT-15P742 |
| | Radiators | |
| Q913a | 27160211Y | RAD-68 |
| Q914a | 27160211Y | RAD-68 |
| | TUNER CIRCUIT PC BOARD (NARF-4960-4A/4B) | |
| CIRCUIT NO. | PART NO. | DESCRIPTION |
| | Front end | |
| TU001 | 240089 | FE415-G11 |
| | ICs | |
| Q103 | 22240039 | LA1266 |
| Q201 | 22240242 | AN7470 |
| Q701 | 22240090 | LM7001 |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|------------------------|------------------------------------|
| | Transistors | |
| Q101 | 2211723 | 2SC1923-O |
| Q102 | 2210746 | 2SC945A-P |
| Q104,Q105 | 2213284 or | 2SC1740S-R or |
| Q702 | 2212115 | 2SC2458-GR |
| Q202 | 2213510 or | DTA114ES or |
| Q704,Q705 | 2214350 | RN2202 |
| Q203,Q204 | 2212794 | 2SD1468-R |
| Q703 | 2212445 | 2SK365-GR |
| | Diodes | |
| D101,D102 | 223191 | SD101 |
| D103-D106 | 223163, | 1SS133, |
| D201,D701 | 223205 or | 1SS270A or |
| | 223222 | WG713A |
| | Transformers and coils | |
| L101 | 233401 | NFIF-4072 |
| L102 | 233402 | NFIF-4073 |
| L103 | 233454M022 | NCH-1452 022M |
| L151 | 232162 | NMRF-7064, RF block |
| L152 | 232139 | NMIF-4062 |
| L201 | 233383 | NMC-6070 |
| L203,L204 | 233355A | NMC-4059 |
| | Ceramic filters | |
| X101,X102 | 3010071 | SFE10.7MA5 |
| X103 | 3010130 | SFE10.7MZ2A |
| X151 | 3010123 | SFZ-450JL |
| X152 | 3010076 | BFU-450C |
| | Resonator | |
| X701 | 3010141 | XTL-7.2M |
| | Capacitors | |
| C001 | 393341017 | 100 μ F,16V,Elect. |
| C105 | 354742209 | 22 μ F,16V,Elect. |
| C106,C112 | 354784799 | 0.47 μ F,50V,Elect. |
| C110 | 393341017 | 100 μ F,16V,Elect. |
| C111 | 354780229 | 2.2 μ F,50V,Elect. |
| C117 | 354781099 | 0.1 μ F,50V,Elect. |
| C154 | 393341007 | 10 μ F,16V,Elect. |
| C155 | 354780479 | 4.7 μ F,50V,Elect. |
| C156,C157 | 393341007 | 10 μ F,16V,Elect. |
| C159,C160 | 374724734 | 0.047 μ F \pm 5%,50V,Plastic |
| C161 | 354741009 | 10 μ F,16V,Elect. |
| C201 | 374724734 | 0.047 μ F \pm 5%,50V,Plastic |
| C202 | 393341007 | 10 μ F,16V,Elect. |
| C204 | 354744719 | 470 μ F,16V,Elect. |
| C205,C206 | 374721224 | 1200pF \pm 5%,50V,Plastic <P> |
| C205,C206 | 374721524 | 1500pF \pm 5%,50V,Plastic <W> |
| C207-C210 | 393341007 | 10 μ F,16V,Elect. |
| C212 | 354780109 | 1 μ F,50V,Elect. |
| C213 | 354780339 | 3.3 μ F,50V,Elect. |
| C214 | 354782299 | 0.22 μ F,50V,Elect. |
| C215 | 370134714 | 470pF \pm 5%,100V,Plastic |
| C217 | 354784799 | 0.47 μ F,50V,Elect. |
| C701 | 393321017 | 100 μ F,6.3V,Elect. |
| C705,C706 | 374721034 | 0.01 μ F \pm 5%,50V,Plastic |
| C707 | 353780229 | 2.2 μ F,50V,Elect. |
| C708 | 353782299 | 0.22 μ F,50V,Elect. |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------|----------------------|
| | Resistors | |
| R101 | 5210266 | N06HR100KBC,Trim |
| R201 | 5210261 | N06HR5KBC,Trim |
| R202 | 5210267 | N06HR200KBC,Trim |
| | Terminal | |
| P101 | 25060117 | NTM-4PDMLO51,Antenna |
| | Socket | |
| P201b | 25051053 | NSCT-15P840 |

MONO OUTPUT TERMINAL PC BOARD(NAETC-4961-4)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|------------|------------------------|
| Q581,Q582 | 2213640 or | DTC123IS or |
| | 2214660 | RN1205,Transistors |
| JL516a | 25051112 | NSCT-8P899,Wire holder |
| P514b | 25051050 | NSCT-10P873,Socket |
| P552 | 25045302 | NPJ-1PDBL161,Terminal |
| P915a | 25050672 | NSCT-4P476,Socket |

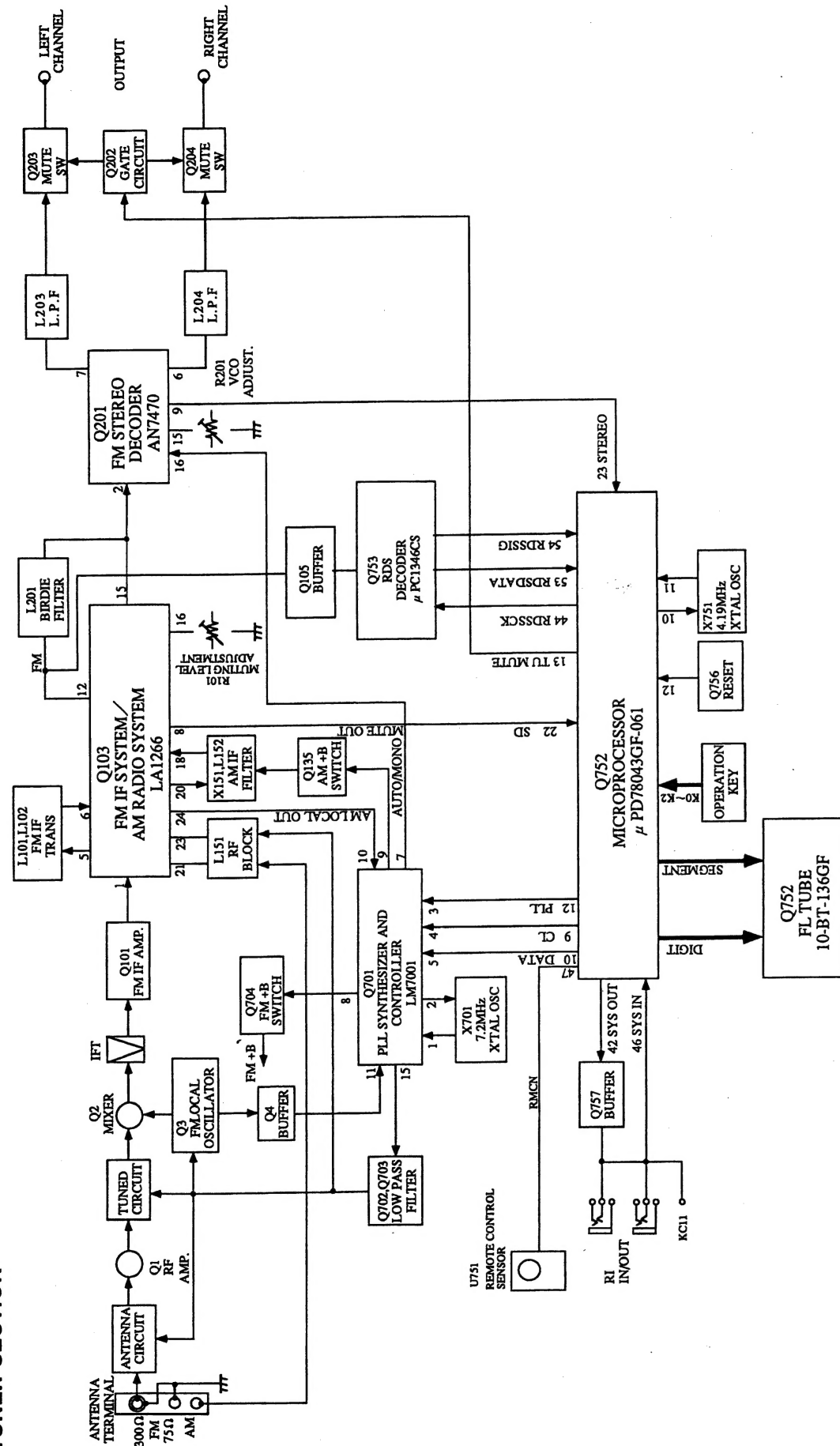
HEADPHONE TERMINAL PC BOARD(NAETC-4962-4)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|---------------------------|
| P503 | 25045257 | YKB26-5138,Headphone jack |
| JL515b | 25051107 | NSCT-3P894,Wire holder |

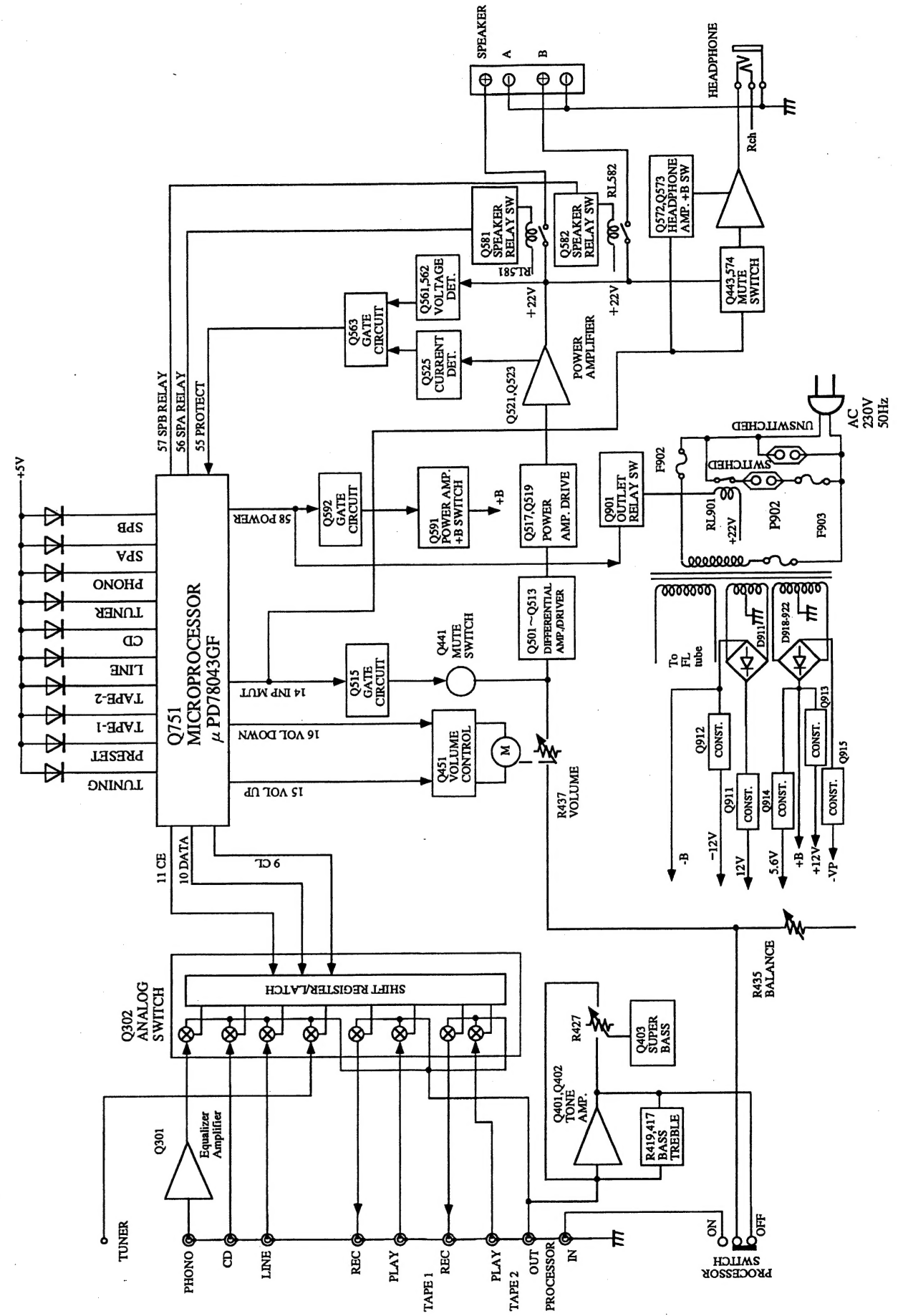
DISPLAY CIRCUIT PC BOARD (NADIS-4964-4A/4B)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------------------|-----------------------------------|
| | Remote control sensor | |
| U001 | 24130010 | HC-312 |
| | ICs | |
| Q751 | 22240769 | μ PD78043GF-061 |
| Q753 | 22240679 | μ PC1346CS |
| | Fluorescent tube | |
| Q752 | 212131 | 10-BT-136GK |
| | Transistors | |
| Q754,Q755 | 2213160 | DTC124ES |
| Q756 | 221282 | DTC144ES |
| Q757 | 2212600 | DTA124ES |
| | Diodes | |
| D751-D761 | 225291D | SEL4910D-D |
| D762-D766 | 223163, | 1SS133, |
| D768,D769 | 223205 or | 1SS270A or |
| | 223222 | WG713A |
| D767 | 224450562 | MTZ5.6B |
| D770 | 224450512 | MTZ5.1B |
| | Resonators | |
| X751 | 3010224 | XTL4.19M |
| X752 | 3010203 | AF6146CG |
| | Capacitors | |
| C751 | 3000075 or | EECS5R5T473 |
| | 3000074 | DX5R5L473,Super |
| C752 | 375524744 | 0.47 μ F \pm 5%,50V,Plastic |
| C755,C759 | 353741009 | 10 μ F,16V,Elect. |
| C761 | 353780109 | 1 μ F,50V,Elect. |
| C763 | 3060011 | NTC-45P10,Trim |
| C783,C788 | 353780229 | 2.2 μ F,50V,Elect. |
| C785,C791 | 374724724 | 4700pF \pm 5%,50V,Plastic |

BLOCK DIAGRAM TUNER SECTION



AMPLIFIER SECTION



CIRCUIT NO. PART NO. DESCRIPTION

| | | |
|-----------|-------------|--------------------------|
| Q591 | Transistors | |
| | 2213510 or | DTA114ES or |
| Q592 | 2214350 | RN2202 |
| | 2213290 or | DTC114ES or |
| D505,D506 | 2214230 | RN1202 |
| | Diodes | |
| 223163, | 1SS133, | |
| | 223205 or | 1SS270A or |
| 223222 | WG713A | |
| | Capacitors | |
| C501,C502 | 393341007 | 10 μ F,16V,Elect. |
| C507,C508 | 393322217 | 220 μ F,6.3V,Elect. |
| C511,C512 | 393322217 | 220 μ F,6.3V,Elect. |
| C589 | 393381017 | 100 μ F,50V,Elect. |
| C590 | 393382217 | 220 μ F,50V,Elect. |
| Resistors | | |
| R517,R518 | 443522704 | 27 ohm,1/2W,Metal oxide |
| R525,R526 | 443521014 | 100 ohm,1/2W,Metal oxide |
| R589,R590 | 443522204 | 22 ohm,1/2W,Metal oxide |
| Plugs | | |
| P511 | 25055324 | NPLG-10P307 |
| P512 | 25055319 | NPLG-5P302 |

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4968-4A/4B)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|------------|-----------------------------|
| Transistor | | |
| Q901 | 2213640 or | DTC123JS or |
| | 2214660 | RN1205 |
| Diode | | |
| D901 | 223163, | 1SS133, |
| | 223205 or | 1SS270A or |
| 223222 | WG713A | |
| | Capacitors | |
| C901,C902 | 3500065A | △ DE7150FZ103PAC400/125V,IS |
| Resistor | | |
| R902 | 443622214 | 220 ohm,1W,Metal oxide |
| Terminal | | |
| P906 | 25045330 | NPI-2PDBL184 |
| Relay | | |
| RL901 | 25065483 | △ NRL-1P5A-DC12-084 |
| Fuseholders | | |
| F901a | 25050065 | △ YSH403T <W> |
| F902a | 25050065 | △ YSH403T |
| F903a | 25050065 | △ YSH403T <P> |
| Fuse | | |
| F901 | 252150 | △ 3.15A-TSC,Primary <W> |
| F902 | 252073 | △ 1.6A-SE-EAK,Primary |
| F903 | 252075 | △ 2.5A-SE-EAK,Primary <P> |
| Plugs | | |
| P914a | 25055675 | NPLG-2P631 |
| P915b | 25055406 | NPLG-4P388 |
| AC outlet | | |
| P902P | 25051125 | △ NSCT-4P912 |

CIRCUIT NO. PART NO. DESCRIPTION

| | | |
|-------------|-----------|------------------------------------|
| Capacitors | | |
| C786,C787 | 374723324 | 3300pF \pm 5%,50V,Plastic |
| C789 | 374724734 | 0.047 μ F \pm 5%,50V,Plastic |
| C790 | 374722234 | 0.022 μ F \pm 5%,50V,Plastic |
| Resistors | | |
| R799 | 5210265 | N06HR50KBC,Trim |
| Switches | | |
| S751-S772 | 25035652 | NPS-111-S604 |
| Socket | | |
| P701b | 25050955 | NSCT-15P742 |
| Wire holder | | |
| JL702b | 25051095 | NSCT-11P882 |
| Holder | | |
| | 27190943 | L.E.D |

TONE CIRCUIT PC BOARD (NAAF-4966-4)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------|------------------------------------|
| ICs | | |
| Q401-Q403 | 22240273 | NJM4565S-D |
| Capacitors | | |
| C401,C402 | 393380107 | 1 μ F,50V,Elect. |
| C409,C410 | 393380227 | 2.2 μ F,50V,Elect. |
| C411,C412 | 374723334 | 0.033 μ F \pm 5%,50V,Plastic |
| C413,C414 | 393380227 | 2.2 μ F,50V,Elect. |
| C415,C416 | 374721834 | 0.018 μ F \pm 5%,50V,Plastic |
| C419,C420 | 393380227 | 2.2 μ F,50V,Elect. |
| C421,C422 | 374723934 | 0.039 μ F \pm 5%,50V,Plastic |
| C427,C428 | 393341007 | 10 μ F,16V,Elect. |
| Resistors | | |
| R417-R420 | 5104328 | N14RLC100K15Z,Tone |
| R427,R428 | 5104328 | N14RLC100K15Z,S bass |
| R435 | 5104258 | N11RGLC250KWT15Z,Balance |
| Wire holder | | |
| P401b | 25051094 | NSCT-10P881 |

MAIN AMPLIFIER PC BOARD (NAAF-4967-4)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------------|---------------|
| Transistors | | |
| Q501-Q504 | 2211733 or | 2SC1845-E or |
| Q513,Q514 | 2211732 | 2SC1845-F |
| Q505,Q506 | 2213354 or | 2SA933S-R or |
| | 2212125 | 2SA1048-GR |
| Q507-Q510 | 2213284 or | 2SC1740S-R or |
| | 2212115 | 2SC2458-GR |
| Q511,Q512 | 2211793 or | 2SA992-E or |
| | 2211792 | 2SA992-F |
| Q521,Q522 | 2202375, | * 2SC4466-P, |
| | 2202373, | * 2SC4466-O, |
| 2202374, | * 2SC4466-Y, | |
| | * 2SC3180N-O or | |
| 2202352 | * 2SC3180N-R | |
| | * 2SA1693-P, | |
| Q523,Q524 | 2202365, | * 2SA1693-O, |
| | 2202363, | * 2SA1693-Y, |
| 2202364, | * 2SA1263N-O or | |
| | * 2SA1263N-R | |

VOLUME PC BOARD (NAETC-4969-4)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-------------|------------------------|
| Q431 | 22240239 | TA7291S,IC |
| D431 | 22380035 or | GP104003E or |
| | 22380046 | AM01Z,Diode |
| R437,R438 | 5104338 | N16RQL100KBT25F,Volume |
| P402b | 25050985 | NSCT-12P772,Socket |

RELAY CIRCUIT PC BOARD (NAETC-4970-4)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|---------------|---|
| D581,D582 | 223163, | 1SS133, |
| | 223205 or | 1SS270A or |
| 223222 | WG713A,Diodes | |
| | 231176S | S-1.3C,Coils |
| L501,L502 | 374722234 | 0.022 μ F \pm 5%,50V,Plastic capacitors |
| C585,C586 | 453530824 | 8.2 ohm, 1/2W,Metal resistors |
| R585,R586 | 25065485 | NRL-2P2A-DC24-085,Relaies |
| RL581,RL582 | 25060125 | NTM-8PDMN058,Speaker terminal |
| P551 | 25050285 | NSCT-8P113,Socket |
| JL514b | | |

VOLTAGE SELECTOR SWITCH PC BOARD (NAETC-4972-4)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|--|
| S902 | 25065437 | △ NSS-22157P,Voltage selector switch <W> |

NOTE: <P>:230 V model only
<W>:Worldwide model only

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